DECLARATION

I, NOBUAKI KATO, a Japanese Patent Attorney registered No. 8517, of Okabe International Patent Office at No. 602, Fuji Bldg., 2-3, Marunouchi 3-chome, Chiyoda-ku, Tokyo, Japan, hereby declare that I have a thorough knowledge of Japanese and English languages, and that the attached pages contain a correct translation into English of the priority documents of Japanese Patent Application No. 2000-166649 filed on June 2, 2000 in the name of CANON KABUSHIKI KAISHA.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made, are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

signed this 13th day of June, 2006.

Nobuaki Kato

PATENT OFFICE
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This is to certify that the annexed is a true copy of the following application as filed with this Office.

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[Title of the Invention]

Information Processing Apparatus,
Device Management Apparatus, Network System,
Coping Method with Device Problem, and
Storage Medium

[What is Claimed is:]

[Claim 1]

An information processing apparatus communicatable with a user side of an arbitrary device, comprising:

receiving means for receiving a problem of the device from the user side as a quantified information; and

transmitting means for transmitting a coping information for the problem based the quantified information received by the receiving means to the user side.

[Claim 2]

An information processing apparatus according to claim 1, further comprising diagnosing means for diagnosing the problem based the quantified information received by the receiving means,

wherein the transmitting means transmits the coping information for the problem based on a diagnosis result at the diagnosing means to the user side.

[Claim 3]

An information processing apparatus according to claim 1,

wherein the quantified information includes an information selected from at least hierarchical kinds and degrees of the problem.

[Claim 4]

An information processing apparatus communicatable with a management side of an arbitrary device, comprising:

transmitting means for transmitting a problem of the device to the management side as a quantified information; and

receiving means for receiving a coping information for the problem based on the quantified information from the management side.

[Claim 5]

An information processing apparatus according to claim 4, further comprising input means for selectively inputting an item corresponding to the problem, of a hierarchical items concerning at least kinds and degrees of the problem,

wherein the transmitting means transmits an inputted information by the input means to the management side as the quantified information.

[Claim 6]

An information processing apparatus which is a device to be used by a user, provided with the means of the information processing apparatus according to Claim 4 or 5.

[Claim 7]

An information processing apparatus according to one of claims 1 to 6, wherein the device includes a printer

for printing and outputting an inputted information.

[Claim 8]

A device management apparatus for managing a plurality of devices on a network via the network, provided with functions of the device management apparatus according to one of claims 1 to 3.

[Claim 9]

A device management apparatus for managing a plurality of devices on a network via the network, comprising at least one of

storage means for storing a problem of a device as a quantified information; and

storage means for storing a coping information with the problem corresponding to the quantified information of plural patterns.

[Claim 10]

A network system in which at least a user side of a plurality of devices and a server for managing the plurality of devise are connected on a network,

wherein the user side and the server respectively have a function of the information processing apparatus according to one of claims 1 to 7, or a function of the device management apparatus according to claim 8 or 9.

[Claim 11]

A device problem coping method for a user to cope with a problem that the user feels upon using the device, comprising:

a first transmitting step in which a terminal apparatus or the device in the user side transmits a problem information inputted by the user to a management side of the device as a quantified information;

a receiving step in which a terminal apparatus in the management side receives the quantified information transmitted in the first transmitting step; and

a second transmitting step in which the terminal apparatus in the management side transmits a coping information for the problem based on the quantified information received in the receiving step to the terminal apparatus or the device in the user side.

[Claim 12]

A device problem coping method according to claim 11, further comprising a displaying step of selectively displaying on a screen arbitrary one of hierarchical items concerning at least kinds and degrees of the problem,

wherein the first transmitting step includes a step of transmitting the item selected by the user on the screen in the displaying step to the management side of the device as the quantified information.

[Claim 13]

A device problem coping method according to claim 11, further comprising a diagnosing step of diagnosing the problem based on types of the device in which the problem occurs,

wherein the second transmitting step includes a step

of transmitting the coping information with the problem based on a diagnosis result in the diagnosing step to the terminal apparatus or the device in the user side.

[Claim 14]

A storage medium computer-readably storing a processing program for executing a function of the information processing apparatus according to one of claims 1 to 7, a function of the device management apparatus according to claim 8 or 9, or a function of the network system according to claim 10.

[Claim 15]

A storage medium computer-readably storing a processing step of a device problem coping method according to one of claims 11 to 13.

[Detail Explanation of the Invention]

[0001]

[Field of the Invention]

The present invention relates to an information processing apparatus, a device management apparatus, a network system, a coping method with device problem, and a storage medium which are used in, for example, an apparatus or a system for managing a device such as a printer via a network.

[0002]

[Prior Art]

Conventionally, there is a system that is configured to manage a plurality of printers connected over an arbitrary

network by a server via the network. Such the system is utilized such that a maintenance service side for offering maintenance services of printers collectively manages the printers on a user side.

[0003]

[Subject to be Solved by the Invention]

Incidentally, in the above-mentioned conventional system, if a problem such as a lack of sheet and a sheet jam occurs in the printer on the user side, the printer can automatically sense the problem and notify the user of the problem. Thus, the user can cope with the problem by a work such as that for supplying the sheets and discharging the sheets in response to the problem occurred.

[0004]

However, when problems that are not found by a user sensorily such as a fogged image on a printed out sheet, an edge smeared with black, folded one-side of printed-out sheet occurs, the printer cannot automatically sense such the sensory problems. Thus, the user needs to inquire a coping method with the problem to the maintenance service side by a telephone or the like. In addition, the printer notifies the user not only of such the sensory problems but also the problem such as the above-mentioned sheet jam after the problem actually occurred. Thus, the user also needs to inquire the coping method with the problem to the maintenance service side by the telephone or the like, if the user wishes to cope with it at a stage of sign before

it actually occurs.

[0005]

Therefore, conventionally, if there is the problem that is found by the user sensorily or if the user feels the sign of the problem which is not yet sensed by the printer, the user has to take an extremely bothersome procedure of inquiring the coping method with the problem to the maintenance service side by the telephone or the like.

In particular, when the maintenance service side manages the printers of many users, it is very difficult for the maintenance service side to promptly respond to all the users' inquiries. Therefore, the inquiring user is put on a response waiting state for the coping method with the problem, or maintenance waiting state, during which the user may not be able to use the printer.

[0006]

The present invention has been devised in view of the above situations, and it is an object of the present invention to provide an information processing apparatus, a device management apparatus, a network system, a coping method with device problem, and a storage medium computer-readably stored processing steps for carrying out the coping method, for allowing a user to easily cope with various problems of a device, and for allowing a maintenance service side to efficiently manage the device.

[0007]

[Means for Solving the Subject]

For achieving the object, the first invention relates to an information processing apparatus communicatable with a user side of an arbitrary device, and it comprises receiving means for receiving a problem of the device from the user side as a quantified information; and transmitting means for transmitting a coping information for the problem based the quantified information received by the receiving means to the user side.

[0008]

The second invention, in the first invention, further comprises diagnosing means for diagnosing the problem based the quantified information received by the receiving means, wherein the transmitting means the coping information for the problem based on a diagnosis result at the diagnosing means to the user side.

[0009]

In the third invention, in the third invention, the quantified information includes an information selected from at least hierarchical kinds and degrees of the problem.

[0010]

The fourth invention relates to an information processing apparatus communicatable with a management side of an arbitrary device, and it comprises transmitting means for transmitting a problem of the device to the management side as a quantified information; and receiving means for receiving a coping information for the problem based on the quantified information from the management side.

[0011]

The fifth invention, in the fourth invention, further comprises input means for selectively inputting an item corresponding to the problem, of a hierarchical items at least concerning with kinds and degrees of the problem, wherein the transmitting means transmits an inputted information by the input means to the management side as the quantified information.

[0012]

The sixth invention relates to an information processing apparatus which is a device to be used by a user, and it is provided with the means of the information processing apparatus according to Claim 4 or 5.

[0013]

In the seventh invention, in any of the sixth invention, the device includes a printer for printing and outputting an inputted information.

[0014]

The eighth invention relates to a device management apparatus for managing a plurality of devices on a network via the network, and it is provided with functions of the device management apparatus according to one of claims 1 to 3.

[0015]

The ninth invention relates to a device management apparatus for managing a plurality of devices on a network via the network, and it comprises at least one of storage

means for storing a problem of a device as a quantified information; and storage means for storing a coping information with the problem corresponding to the quantified information of plural patterns.

[0016]

The tenth invention relates to a network system in which at least a user side of a plurality of devices and a server for managing the plurality of devise are connected on a network, wherein the user side and the server respectively have a function of the information processing apparatus according to one of claims 1 to 7, or a function of the device management apparatus according to claim 8 or 9.

[0017]

The eleventh invention relates to a device problem coping method for a user to cope with a problem that the user feels upon using the device, and it comprises a first transmitting step in which a terminal apparatus or the device in the user side transmits a problem information inputted by the user to a management side of the device as a quantified information; a receiving step in which a terminal apparatus in the management side receives the quantified information transmitted in the first transmitting step; and a second transmitting step in which the terminal apparatus in the management side transmits a coping information for the problem based on the quantified information received in the receiving step to the terminal apparatus or the device in the user side.

[0018]

The twelfth invention, in the eleventh invention, further comprises a displaying step of selectively displaying on a screen arbitrary one from hierarchical items concerning at least kinds and degrees of the problem, wherein the first transmitting step includes a step of transmitting the item selected by the user on the screen in the displaying step to the management side of the device as the quantified information.

[0019]

The thirteenth invention, in the twelfth invention, further comprises a diagnosing step of diagnosing the problem based on types of the device in which the problem occurs, wherein the second transmitting step includes a step of transmitting the coping information with the problem based on a diagnosis result in the diagnosing step to the terminal apparatus or the device in the user side.

[0020]

The fourteenth invention relates to a storage medium computer-readably storing a processing program for executing a function of the information processing apparatus according to one of claims 1 to 7, a function of the device management apparatus according to claim 8 to 9, or a function of the network system according to claim 10.

[0021]

The fifteenth invention relates to a storage medium computer-readably storing a processing step of a device

problem coping method according to one of claims 11 to 13 to be read out by a computer.

[0022]

[Preferred Embodiments of the Invention]

Hereinafter, embodiments of the present invention will be explained with reference to the drawings.

[0023]

(First Embodiment)

The present invention is applied to, for example, a network system 100 shown in Fig. 1.

[0024]

<Entire configuration of Network system 100>

The network system 100, as shown in Fig. 1, has a configuration in which user sides 120(1), 120(2), ... and a printer management server 130 for managing printers provided in the user sides 120(1), 120(2), ... are communicatably connected via a network 110 such as an Internet.

[0025]

The printer management server 130 includes a terminal apparatus (information processing apparatus) 130a such as a personal computer and a database 130b, as described in detail later. The printer management server 130 is communicatably connected to a service center (maintenance service side) 140 for offering maintenance services of the printers provided on the user sides 120(1), 120(2), ... via arbitrary communicating means (a network 110, a telephone,

a facsimile machine or the like).

[0026]

The plurality of user sides 120(1), 120(2), ... correspond to office systems of an individual or a corporation. For example, the user side 120(1) has a configuration in which printers 121(1), 121(2), ..., 121(n) and a terminal apparatus (information processing apparatus) 122 such as a personal computer are communicatably connected via a LAN 123.

[0027]

The printers 121(1), 121(2), ..., 121(n) are printers being service objects by the service center 140, and are managed by the printer management server 130 via the network 110.

In addition, the printers 121(1), 121(2), ..., 121(n) are configured such that they can be operated by printer bodies themselves and also can be operated by the terminal apparatus 122 via the LAN 123.

[0028]

Incidentally, an internal configuration of the user sides 120(1), 120(2), ... is not limited to the above-mentioned internal configuration of the user side 120(1). That is, the number of the connected printers, the number of the terminal apparatus connected, or the presence or absence of the terminal apparatus is not limited to the above modes. For example, a user side (X) may be configured such that an operation similar to that of the

terminal apparatus to be described later is given to an operation panel of the printer, and only the printer is directly connected to the network 110. Detail of an example of such the configuration will be explained in a second embodiment.

In addition, although the plurality of user sides 120(1), 120(2), ... are provided in the above Fig. 1, the number of the user sides is not limited to this mode.

In addition, in the following explanation, among the user sides 120(1), 120(2), . . ., the user side 120(1) will be considered for simplicity of the explanation.

[0029]

<Terminal apparatuses of Printer management server 130 and User side 120(1)>

The terminal apparatus 130a of the printer management server 130 and the terminal apparatus 122 of the user side 120(1) have similar configurations.

[0030]

For example, the terminal apparatus 130a and the terminal apparatus 122 respectively have a function of a computer 600 configured as shown in Fig. 2, and operations of the system 100 in this embodiment is executed by a CPU 601 in the computer 600 of such the configuration.

[0031]

As shown in the above Fig. 2, the computer 600 has a configuration in which the CPU 601, an ROM 602, and an RAM 603; and a keyboard controller (KBC) 605 of a keyboard

(KB) 609, a CRT controller (CRTC) 606 of a CRT display (CRT) 610 as a displaying portion, a disk controller (DKC) 607 for a hard disk (HD) 611 and a floppy disk (FD) 612, and a network interface card (NIC) 608, are mutually communicatably connected via a system bus 604.

The system bus 604 is connected with the Internet 110 shown in the above Fig. 1.

[0032]

The CPU 601 collectively controls each of components connected to the system bus 604 by executing a software stored in the ROM 602 or the HD 611, or a software to be supplied from the FD 612.

That is, the CPU 601 reads out, from the ROM 602, the HD 611 or the FD 612, a processing program (software) in accordance with a processing sequence for implementing the operations of the system 100, and executes the processing program. Thus, the operations of the system 100 in this embodiment are realized.

[0033]

The RAM 603 functions as a main memory, a work area or the like of the CPU 601.

The KBC 605 controls an instruction input from the KB 609, a pointing device (not shown) or the like.

The CRTC 606 controls a display screen of the CRT 610.

The DKC 607 controls an access with the HD 611 and the FD 612 which store a boot program, various applications, an editing file, a user file, a network management program,

a processing program to be executed by the CPU 601 and the like.

The NIC 608 sends and receives data to and from the user side 120(1), the printer management server 130 or the like on the network 110.

[0034]

<Functional configuration of Printer management server 130>

Fig. 3 illustrates a configuration of the printer management server 130 functionally.

As shown in the above Fig. 3, the printer management server 130 is provided with an information receiving unit 132, an information transmitting unit 133, a communication controlling unit 131, an operation managing unit 134, and an information processing unit 135.

The information receiving unit 132 receives an information by communication with the NIC 608 via the network 110 or the like, the information transmitting unit 133 transmits an information by communication with the NIC 608 via the network 110 or the like, and the communication controlling unit 131 controls operations for transmitting and receiving of the information in the information receiving unit 132 and the information transmitting unit 133.

The operation managing unit 134 manages an operation of maintenance services by the system 100, and the information processing unit 135 executes various kinds of processing for implementing operations of the system 100 to be described later.

[0035]

Incidentally, the function of each of the components 131 to 135 shown in the above Fig. 3 is realized by the CPU 601 shown in the above Fig. 2 which reads out and executes the processing program (software) stored in the ROM 602, the HD 611, the FD 612 or the like also shown in the above Fig. 2.

[0036]

In addition, the database 130b of the printer management server 130 includes an individual printer management area 137a, an each type diagnosis information management area 137b, an individual printer state management area 137c, a questionnaire information management area 137d, and a maintenance instruction area 137e.

[0037]

In the individual printer management area 137a, an information (types of printers, user information and the like) concerning respective printers managed by the system 100 (hereinafter referred to as a "management printer") is held (registered).

Here, the management printer refers to, for example, a printer which has concluded an agreement for receiving maintenance services by the service center 140.

[0038]

In the each type diagnosis information management area 137b, a diagnosis information required for diagnosis of the problem for each type of the printer in which the problem

occurred is held. More specifically, for example, concerning various occurring problems, diagnosis information such as a cause of the problem occurrence, and parts of the printers that should be checked are held, for each type of the printers.

Here, the reason of the diagnosis information being set for each type of the printer is that the information required for the diagnosis of problem are different for each type of the printers, even if the occurred problem is the same.

[0039]

In the individual printer state management area 137c, an information concerning a state of respective management printers is held. More specifically, for example, history information such as the times of occurrences (notifications) of problems and contents of the problem are held, together with the information about the number of prints to date, in the respective management printers.

[0040]

In the questionnaire information management area 137d, a questionnaire information for making inquiries is held to the users of the management printer.

[0041]

In the maintenance instruction area 137e, a maintenance instruction information concerning an instruction is held to be used when the user personally copes with the problem in the management printer.

[0042]

<Operation of Network system 100>

Fig. 4 shows operations of the network system 100. Fig. 5 to Fig. 11 show one example of a display screen of the terminal apparatus 122 of the user side 120(1).

[0043]

Step S201:

For example, when the user uses the printer 121(1) in the user side 120(1), in a case that the problem occurs, or the user feels the sensory problem (such as a rather fogged image on the print out sheet, an edge smeared with black, folded one-side of printed sheet) in the printer 121(1), the user notify the printer management server 130 of the problem. For the notifications, the user performs operations for processing of a next step S202 onward by the terminal apparatus 122.

[0044]

Step S202:

First, on the CRT 610 of the terminal apparatus 122, a screen 301 shown in the above Fig. 5 is displayed, which includes a printer information notification icon 301a.

The user clicks the icons 301a of the screen 301 by the KB 609 or a mouse (not shown).

Incidentally, the icon 301a can be set when a printer driver is installed in the terminal apparatus 122.

[0045]

When the icons 301a of the screen 301 is clicked, a

screen 302 shown in the above Fig. 6 is displayed on the CRT 610 of the terminal apparatus 122. On this screen 302, a "sheet remaining amount", a "toner remaining amount", a "number of print sheet" and a "problem notification" can be selected.

The user selects the "problem notification" by the KB 609 or the mouse (not shown) in order to notify the printer management server 130 of the problem of the printer 121(1).

[0046]

When the "problem notification" on the screen 302 is selected, a screen 303 shown in the above Fig. 7 is displayed on the CRT 610 of the terminal apparatus 122. On this screen 303, a printer name inputting portion 303a, a problem inputting portion 303b and a transmission button 303c are provided.

[0047]

The printer type inputting portion 303a, by operating a mark "▽" on a right side thereof, can select a target printer (here, the printer 121(1)) out of the printers 121(1), 121(2), ..., 121(n) included in the user side 120(1).

[0048]

The problem inputting portion 303b, by operating the mark "▽" on a right side thereof, can select a content of a pertinent problem out of various problems.

For example, in the inputting portion 303b as shown by "401" in Fig. 12, pertinent contents of each of a "concerning sheet", a "concerning image quality" and a

"problem degree" can be selected. The "concerning sheet" include a "sheet folded", a "slanted printing", a "double feed", a "jam" and the like as contents that can be selected. The "concerning image quality" include a "smeared with black", a "blob", a "white out", a "blurred" and the like as contents that can be selected. The "problem degree" include a "impossible to use", a "terrible", a "barely acceptable", a "acceptable" and the like as contents that can be selected.

[0049]

Incidentally, a part indicated by "402" in the above Fig. 12 will be described in a second embodiment.

[0050]

Then, the user selects, on the screen 303 of the above Fig. 7, the printer 121(1) in the inputting portion 303a by the KB 609 or the mouse (not shown). Then, the user selects the problem of the printer 121(1), (e.g., "concerning image quality → blob", "problem degree → barely acceptable"), and presses down the transmission button 303c.

[0051]

With the above-mentioned operations by the user, the problem of the printer 121(1) is converted to a quantitative expression (here, "concerning image quality → blob", "problem degree → barely acceptable").

In this way, this embodiment is configured such that a phenomenon differently perceived by each individual as in the case in which one user feels something is the problem whereas other user feels it is not, depending on their

individual senses (sensory problem) is quantified. This can be attained by quantifying the sensory problem by the hierarchical items shown in the above Fig. 12. Thus, the sensory problem can be analyzed or accumulated in the printer management server 140 as the data.

[0052]

Step S203:

When the transmission button 303c on the screen 303 shown in the above Fig. 7 is pressed down, an inputted information (first information) in the screen 303 is transmitted to the printer management server 130 via the network 110.

[0053]

Step S204:

In the printer management server 130, the information receiving unit 132 receives the first information from the user side 120(1).

The information processing unit 135 recognizes the type of the printer in which the problem occurs (here, the printer 121(1)) according to the first information received by the information receiving unit 132. Then, the information processing unit 135 analyzes and diagnoses the problem, using a pertinent information stored in the each type diagnosis information management area 137b of the database 130b.

In addition, the information processing unit 135 stores the first information received this time in the each printer

state management area 137c of the database 130b as a history of problem notifications.

[0054]

Step S205:

The information processing unit 135 compares the information concerning the printer 121(1) stored in the each printer state management area 137c of the database 130b and the first information received this time, if necessary, according to the results of analysis and diagnosis of the problem in the step S204. This comparison is for recognizing whether the problem was notified for the printer 121(1) in the past, and what kind of the problem it was for the notified information, or the like.

[0055]

Step S206(1):

The information processing unit 135 inquires to the user side 120(1), depending on the results of comparison of problems in the step S205, a necessary and insufficient information concerning the problem.

More specifically, the information processing section 135 prepares an appropriate investigation table using the information stored in the questionnaire information management area 137d of the database 130b. The investigation table was prepared based on the results of the analysis and diagnosis of the problem indicated by the first information received this time, and the compared results of the problem by the first information with that of the

past problems.

Then, the information processing section 135 transmits the investigation table from the information transmitting unit 133 to the user side 120(1) via the network 110.

[0056]

Incidentally, the investigation table is prepared anew in this embodiment. However, for example, the investigation tables of a plurality of patterns may be held in advance in the each type diagnosis information management area 137b and the questionnaire information management area 137d of the database 130b as the information. Out of these investigation tables, the pertinent investigation table may be selected and transmitted to the user side 120(1).

[0057]

Step S207(1):

In the user side 120(1), a screen 304 shown in the above Fig. 8 is displayed on the CRT 610 of the terminal apparatus 122. On this screen 301, an area 304a for the investigation table prepared in the information processing unit 135 of the printer management server 130 and a transmission button 304b are provided.

In the investigation table area 304a, various items (questionnaire) for coping with the problem are described, and an input column for answers to the items is provided.

[0058]

On the screen 304 shown in the above Fig. 8, the user inputs an answer to each of the items based on a situation

which the user feels the problem in using the printer 121(1), by the KB 609 or the mouse (not shown). Then, the user presses down the transmission button 304b. Thus, the inputted information on the screen 304 shown in above Fig. 8 is transmitted to the printer management server 130 via the network 110.

[0059]

Step S206(2):

In the printer management server 130, the information receiving unit 132 receives the information transmitted from the user side 120(1).

The information processing unit 135 analyzes and diagnoses the information received by the information receiving unit 132, in the similar manner as the processing in the steps S204 and S205. Then, if necessary, the information processing unit 135 prepares the investigation table again and transmits it from the information transmitting unit 133 to the user side 120(1) via the network 110.

[0060]

Step S207(2):

By the processing of the step S206(2), on the CRT 610 of the terminal apparatus 122 of the user side 120(1), a screen 305 shown in the above Fig. 9 is displayed, following the screen 304 shown in the above Fig. 8. In the screen 305, an answer to each of the items is inputted by the user. Then, the inputted information in the screen 305 shown in

the above Fig. 9 is transmitted to the printer management server 130 via the network 110.

[0061]

The above-mentioned steps S206 and S207 are repeatedly executed for a required times (N times).

In this way, the problem situation of the printer 121(1) of the user side 120(1) can be grasped quantitatively and in detail by the information processing unit 135 of the printer management server 130.

[0062]

Incidentally, on the screens 304 and 305 shown in the above Figs. 8 and 9, a drawing or a print sample may be displayed simultaneously with the above information. Alternatively, a print test data may be transmitted to the user side 120(1) together with the information on the screens 304 and 305. Then, results of the test data print performed by the user with the printer 121(1) may be displayed on the screens 304 and 305.

[0063]

Step S208:

The information processing unit 135 grasps the problem situation of the printer 121(1) quantitatively according to exchange of the information with the user side 120(1) in steps S206 and S207. Then, based on the results, the information processing unit 135 determines whether or not the user can actually cope with the problem of the printer 121(1) by himself or herself (prospect that the problem

will be solved by a maintenance operation by the user).

As a result of this determination, if the user can actually cope with the problem of the printer 121(1) personally, the information processing unit 135 transmits the information about the pertinent maintenance instruction stored in the maintenance instruction area 137e of the database 130b from the information transmitting unit 133 to the user side 120(1) via the network 110.

[0064]

Incidentally, in the step S208, if the user cannot actually cope with the problem of the printer 121(1) personally, that is, the problem is so serious that the user cannot cope with it personally, the information processing unit 135 requests the service center 140 to call out a serviceman to the user side 120(1). For example, the information processing unit 135 automatically transmits an information indicating to that effect to a terminal apparatus (e.g., a terminal apparatus for management having the configuration shown in the above Fig. 2) in the service center 140. Alternatively, a person in charge on the printer management server 130 side notifies a person in charge on the service center 140 side by telephone, facsimile or the like.

With this, in this case, the serviceman in the service center 140 visits the user side 120(1) to cope with the problem of the printer 121(1).

[0065]

Step S209:

In the user side 120(1), on the CRT 610 of the terminal apparatus 122, a screen 306 shown in the above Fig. 10 is displayed. On this screen 306, an area 306a for a maintenance instruction and an understand button 306b are provided.

[0066]

Step S209:

The user refers to the maintenance instruction displayed on the area 306a of the screen 306 shown in above Fig. 10, and performs a maintenance operation to cope with the problem occurred in the printer 121(1).

Then, the user presses down the understand button 306b on the screen 306 by the KB 609 or the mouse (not shown).

[0067]

Step S210:

When the understand button 306b on the screen 306 shown in the above Fig. 10 is pressed down, a screen 207 shown in the above Fig. 11 is displayed on the CRT 610 of the terminal apparatus 122. On this screen 306, an inputting area 307a for a maintenance operation result and a transmission button 307b are provided.

In the inputting area 307a for a maintenance operation result, a "improved", a "not improved", a "investigate again", a "request calling out serviceman" and the like can be selected.

[0068]

Step S211:

On the screen 307 shown in the above Fig. 11, the user selects a pertinent item in the input area 307a based on a result of the maintenance operation to the printer 121(1) by the KB 609 or the mouse (not shown). Then, the user presses down the transmission button 307b.

With this, the inputted information on the screen 307 shown in the above Fig. 11 is transmitted to the printer management server 130 via the network 110.

[0069]

Step S212:

In the printer management server 130, when the information receiving unit 132 receives the information from the user side 120(1), the information processing unit 135 executes a pertinent processing based on the received information again. The pertinent processing includes the processing from the step S206(N) onward, or the processing for requesting the service center 140 to call out the serviceman.

Then, the information processing unit 135 stores the above-mentioned received information in the each printer state management area 137c of the database 130b, as the history information concerning the problem of this time.

[0070]

As described above, according to this embodiment, in the user side 120(X), when the user recognizes the sensory problem in the printer 121(X) during usage of it, the user can notify the printer management server 130 of the problem

as the quantitative expression. The printer management server 130 can present the coping method with the problem to the user of the user side 120(X). Thus, the user in the user side 120(X) is not required to inquire the problem to the service center 140 by telephone or the like as the user conventionally did, and can cope with the problem efficiently and promptly.

In addition, the user of the user side 120(X) can notify the printer management server 130 of the subtle problem before the problem actually occurs (the problem and the like as the sign the printer 121(X) leading to unusable state). Thus, the user can cope with such subtle problem. That is, the user can cope with the problem while it is still insignificant and before it is too late.

In addition, the user in the user side 120(X) can request to call out the serviceman of the service center 140 only for the problem of highly emergency, whereby costs necessary for the maintenance services can be reduced.

[0071]

Therefore, according to the present invention, an improvement of the user's satisfaction, minimization of the down time, and maximization of the operation rate of the printer provided in the user side 120(X) can be achieved.

[0072]

(Second Embodiment)

In the first embodiment, in the user side 120(X), the terminal apparatus 122 notifies the problem of the printer

121(X).

On the other hand, in this embodiment, the printer 121(X) notifies the problem of the printer 121(X).

[0073]

For example, in the user side 120(1), an operation panel 500 as shown in Fig. 13 is provided in the printer 121(1).

The operation panel includes a display 501 such as an LCD, a select button 502 and a problem notification button 503.

The select button 502 includes up and down and left and right buttons 502a to 502d for selecting various items to be described later, and a decision button 502e.

[0074]

In addition, the printer 121(1) is provided with the function of the computer 600 shown in the above Fig. 2. The CPU 601 in this computer 600 implements operations in accordance with operations on the operation panel 500 to be described later.

[0075]

Fig. 14 shows operations of the network system 100 in this embodiment.

Incidentally, the above Fig. 14 is illustrated with an attention mainly paid on operations different from those in the first embodiment (the operations indicated by the above Fig. 4). Here, only the operations different from those in the first embodiment will be described specifically.

[0076]

Step S201:

In the user side 120(1), during user's usage of the printer 121(1), for example, if the problem occurs in the printer 121(1) or if the user feels the sensory problem in the printer 121(1), the user performs the operations for processing from the next step S202' onward. This operation is required to notify the printer management server 130 of the problem, and performed by the operation panel 500 of the printer 121(1).

[0077]

Step S202':

The user presses down the problem notification button 503 of the operation panel 500. With this, the user can select the items concerning the problem as shown in the above Fig. 12 in the display 501 of the operation panel 500 by the select button 502.

[0078]

More specifically, on the display 501, the hierarchical various items indicated by "401" and "402" shown in the above Fig. 12 are displayed one after another. For example, the user operates the up and down buttons 502a and 502b of the select button 502 to move to the item in the upper or lower hierarchy, operates the left and right buttons 502c and 502d of the select button 502 to display the various items in the certain hierarchy, and operates the decision button 502e of the select bottom 502 to decide the item,

respectively. Thus, the user can select the item concerning the problem.

[0079]

First, the "problem notification" at the uppermost is displayed on the display 501. In this state, the user presses down the down button 502b of the select button 502.

With this, on the display 501, the "concerning sheet", the "concerning image quality", the "problem degree" and the "transmission" of the next hierarchy can be displayed one after another.

[0080]

The user operates the left and right buttons 502c and 502d to display the "concerning sheet", the "concerning image quality", the "problem degree" and the "transmission" on the display 501 one after another. The user presses down the decision button 502e when the desired item is displayed.

Here, since at first whether the problem of the printer 121(1) is related to the sheet or concerning image quality should be inputted, the user presses down the decision button 502e when, for example, the "concerning sheet" is displayed.

[0081]

Next, the user presses down the down button 502b in order to input the pertinent problem among the various problems of the "concerning sheet".

With this, the "sheet folded", the "slanted printing", the "double feed" and the "jam" in the lower hierarchy of

the "concerning sheet" can be displayed one after another on the display 501. An example of a display state on the display 501 is illustrated in Fig. 15.

[0082]

Then, the user operates the left and right buttons 502c and 502d to display the "sheet folded", the "slanted printing", the "double feed" and the "jam" on the display 501 one after another. The user presses down the decision button 502e when the pertinent item is displayed.

[0083]

Next, the user presses down the up button 502a in order to input a degree of the item of the problem inputted by the above-mentioned operation (e.g., "concerning sheet → sheet folded"). With this, the display state of the display 501 returns to the upper hierarchy to display the "concerning sheet", the "concerning image quality", the "problem degree" and the "transmission" again one after another.

[0084]

The user operates the left and right buttons 502c and 502d to display the "concerning sheet", the "concerning image quality", the "problem degree" and the "transmission" on the display 501 one after another. The user presses down the decision button 502e when the desired item (here, "problem degree") is displayed.

[0085]

Next, the user presses down the down button 502b in

order to input the pertinent item among various items of the "problem degree".

With this, the "impossible to use", the "terrible", the "barely acceptable" and the "acceptable" in the lower hierarchy of the "problem degree" can be displayed on the display 501 one after another.

[0086]

The user operates the left and right buttons 502c and 502d to display the "impossible to use", the "terrible", the "barely acceptable" and the "acceptable" on the display 501 one after another. The user presses down the decision button 502e when a desired item is displayed.

[0087]

With the above-mentioned operations by the user, the problem of the printer 121(1) is converted to the quantitative expression (here, "concerning sheet → sheet folded", "problem degree → barely acceptable" or the like").

[0088]

Step S203':

Next, the user presses down the up button 502a in order to transmit the information inputted in the step S202' to the printer management server 130.

With this, the "concerning sheet", the "concerning image quality", the "problem degree" and the "transmission" in the upper hierarchy can be displayed again one after another on the display 501.

[0089]

The user operates the left and right buttons 502c and 502d to display the "concerning sheet", the "concerning image quality", the "problem degree" and the "transmission" on the display 501 one after another. The user presses down the decision button 502e when the desired item (here, "transmission") is displayed.

[0090]

Next, the user presses down the down button 502b in order to input the pertinent item among various items of the "transmission".

With this, the "transmit", the "back to previous screen" and the "stop" in the lower hierarchy of the "transmission" can be displayed on the display 501 one after another.

[0091]

Then, the user operates the left and right buttons 502c and 502d to display the "transmit", the "back to previous screen" and the "stop" on the display 501 one after another. The user presses down the decision button 502e when the desired item (here, "transmit") is displayed.

With this, the information in which the problem of the printer 121(1) is converted to the quantitative expression (here, "concerning sheet → sheet folded", "problem degree → barely acceptable") is transmitted to the printer management server 130 via the network 110.

[0092]

Step S204, Step S205:

In the printer management server 130, the information

receiving unit 132 analyzes and diagnoses the information from the user side 120(1) in the similar manner to that of in the first embodiment. According to results of the analysis, diagnosis or the like, the printer management server 130 requests the service center 140 to call out the serviceman.

[0093]

As described above, according to this embodiment, in the user side 120(X), the user can be notified the problem from the printer 121(1) as well, and therefore can immediately notify the problem on the spot while actually looking at the situation of the printer 121(1).

[0094]

Incidentally, in the second embodiment, although the user requests the service center 140 to call out the serviceman, after the processing of the steps S204 and S205, if necessary, the present invention is not limited to this mode. The detailed information may be exchanged by the investigation table, or the maintenance instruction may be provided, as in the first embodiment. In this case, the display 501 of the operation panel 500 can sufficiently have the display and input functions similar to those in the terminal apparatus 122.

[0095]

In addition, the first and the second embodiments deal with the notification concerning the problem of the printer managed by the printer management server 130 (the printer

for which the agreement for receiving the maintenance services by the service center 140 has been concluded). However, the present invention is not limited to this mode, and may deal with the notification of the problem of other printers on the network 110.

For example, in a case the printer indicated by the problem notification from the user side is the printer that has not been registered in the individual printer management area 137a of the database 130b, an information for urging a registration of the printer (an agreement for receiving the maintenance services by the service center 140) is transmitted to the notifying user side. After confirmation of the registration the services by the first and the second embodiments are provided.Alternatively, the services may be provided for a first problem notification (services are allowed only once).

[0096]

In addition, in the first and the second embodiments, although the device to be managed is the printer, the device is not limited to this mode. Various devices (a scanner, a coping machine or the like) can be included in the device.

[0097]

In addition, needless to mention, the object of the present invention can also be attained by supplying a storage medium to the system or the apparatus. The storage medium has stored a program code of software for realizing the functions of the host and terminal in the first and the

second embodiments. A computer (or a CPU or an MPU) of the system or the apparatus reads out the program code stored in the storage medium.

In this case, the program code itself read out from the storage medium realizes the functions of the first and the second embodiments, and the storage medium having the program code stored therein constitutes the present invention.

As the storage medium for supplying the program code, an ROM, a floppy disk, a hard disk, an optical disk, an magneto-optical disk, a CD-ROM, a CD-R, a magnetic tape, a nonvolatile memory card and the like can be used.

As mentioned above, the functions of the first and the second embodiments are realized by the computer executing the read-out program code. However, needless to mention, the first and the second embodiments may be realized by a processing which is actually executed by an OS or the like operating on the computer partly or entirely based on the instructions of the program code.

Moreover, the functions of the first and the second embodiments may be realized by a following processing. That is, the program code read out from the storage medium is written in a memory provided in a function extending board inserted in the computer or a function extending unit connected to the computer. Needless to mention, a CPU or the like provided in a function extending board or a function extending unit then executes a part of or entire actual

processing based on instructions of the program code.

[0098]

[Effect of the Invention]

As described above, according to the present invention, the user side of the device (the printer or the like) quantifies the problem (the sensory problem or the like) that the user feels during usage of the device, and transmits it to the management side of the device. The management side of the device then returns the information for coping with the problem (the information of instruction for the user to carry out the maintenance personally, or the like) based on the quantified information transmitted from the user side. Accordingly, the user on the user side is not required to inquire the problem to the maintenance service center by the telephone or the like, as the user conventionally did. Thus, the user can cope with any problem efficiently and promptly.

In addition, the user on the user side can also properly cope with the subtle problem before the problem actually occurs in the device (the problem as the sign showing that the device will be unusable). That is, the user can cope with the problem while the problem is not so serious and before it is too late.

In addition, since the user in the user side can request the maintenance service center to call out the serviceman (to the user side) only when the problem is highly urgent, the costs required for the maintenance services can be

reduced.

[0099]

Therefore, according to the present invention, the user's satisfaction can be improved, the downtime can be minimized, and the operating rate of the device provided in the user side can be maximized.

[Brief Description of the Drawings]

[Fig. 1]

It is a block diagram showing a configuration of a network system to which the present invention is applied in a first embodiment.

[Fig. 2]

It is a block diagram showing an internal configuration of a terminal apparatus used in the above-mentioned network system.

[Fig. 3]

It is a block diagram showing a functional configuration of a printer management server of the above-mentioned network system.

[Fig. 4]

It is a flow chart for explaining an operation of the above-mentioned network system.

[Fig. 5]

It is a view for explaining a display screen (icon screen) on a user side of the above-mentioned network system.

[Fig. 6]

It is a view for explaining a display screen

(notification screen) on the user side of the above-mentioned network system.

[Fig. 7]

It is a view for explaining a display screen (temporary notification screen) on the user side of the above-mentioned network system.

[Fig. 8]

It is a view for explaining a display screen (investigation table screen) on the user side of the above-mentioned network system.

[Fig. 9]

It is a view for explaining a display screen (Nth investigation table screen) on the user side of the above-mentioned network system.

[Fig. 10]

It is a view for explaining a display screen (user maintenance manual screen) on the user side of the above-mentioned network system.

[Fig. 11]

It is a view for explaining a display screen (ending screen) on the user side of the above-mentioned network system.

[Fig. 12]

It is a view for explaining an information concerning the problem to be inputted in the above-mentioned temporary notification screen.

[Fig. 13]

It is a view for explaining an operation panel of the printer of the above-mentioned network system in a second embodiment.

[Fig. 14]

It is a flow chart for explaining operations of the above-mentioned network system in the second embodiment.

[Fig. 15]

It is a view for explaining an example of the screen of a display portion of the above-mentioned operation panel.

[Explanation of References]

100: network system

110: network

120(1), 120(2),. . .user side

121(1), 121(2), . . .121(n): printer

122: terminal apparatus

123: LAN

130: printer management server

130a: terminal apparatus

130b: database

131: communication control unit

132: information receiving unit

133: information transmitting unit

134: operation managing unit

135: information processing unit

137a: individual printer management area

137b: each type diagnosis information management area

137c: individual printer state management area

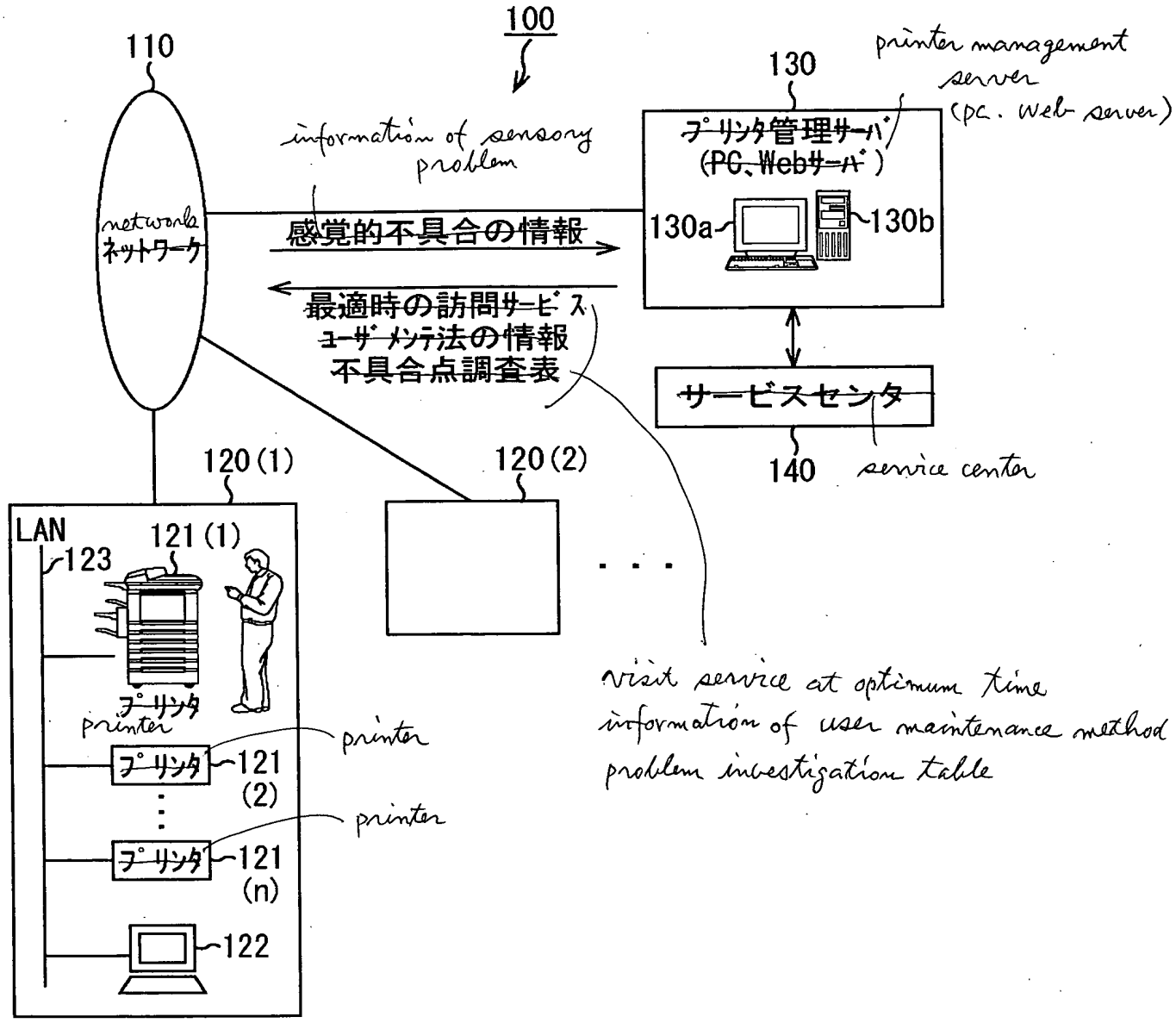
137d: questionnaire information management area

137e: maintenance instruction area

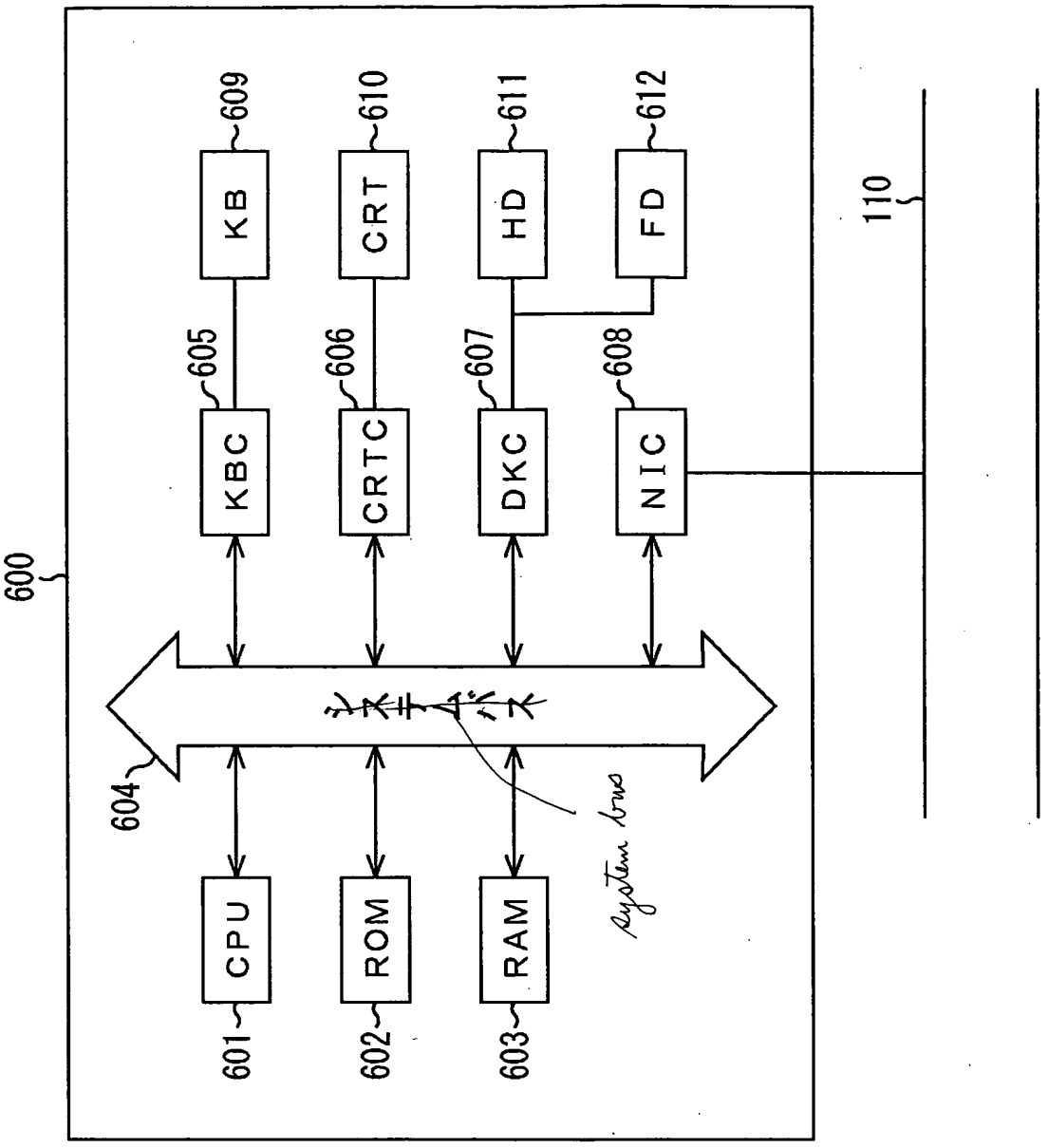
140: service center

【書類名】　　図面

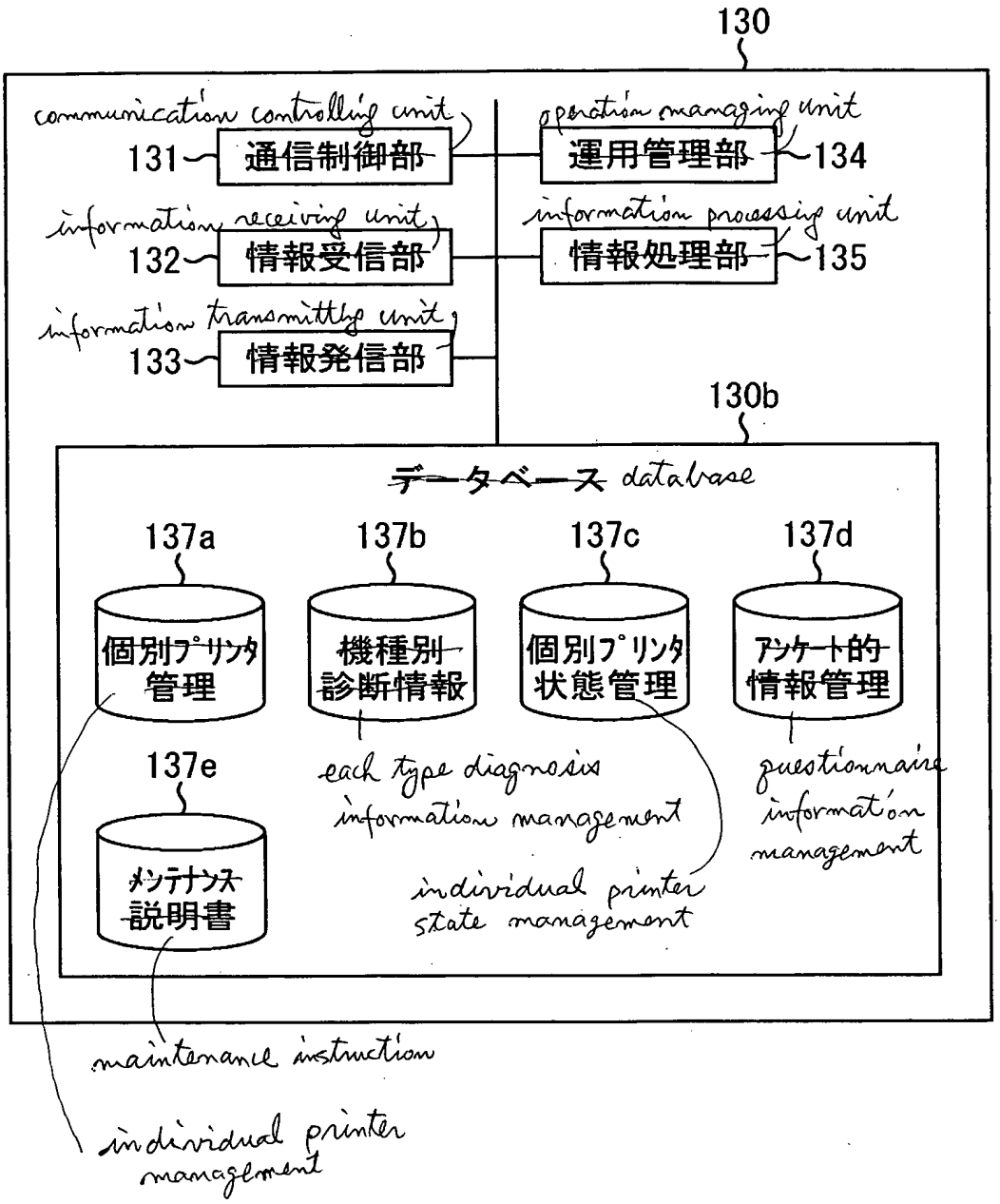
【図１】



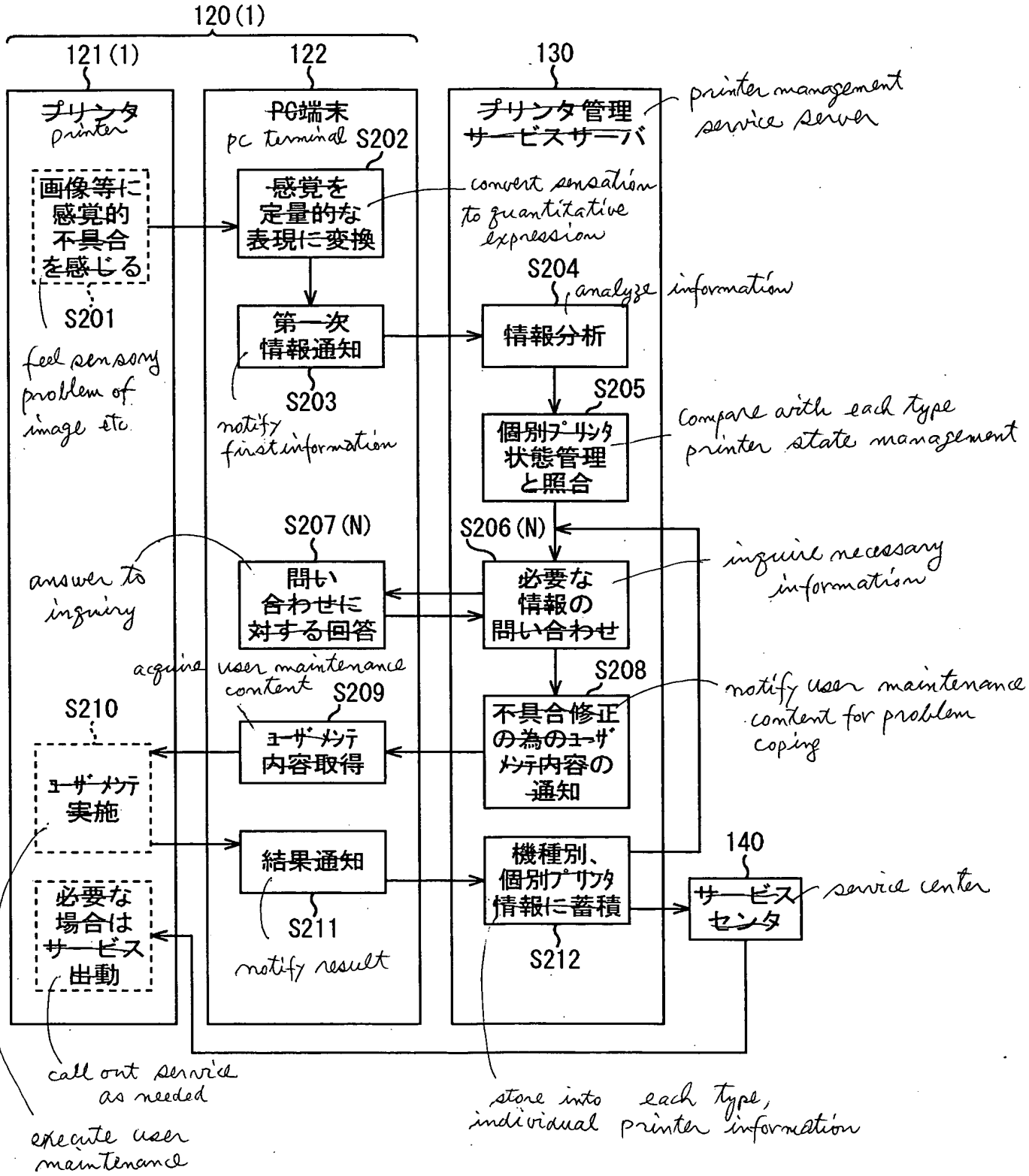
【図２】


600
KB
609
CRT
610
HD
611
FD
612
110
KBC
605
CRTC
606
DKC
607
NIC
608
604
CPU
601
ROM
602
RAM
603
system bus

【図３】

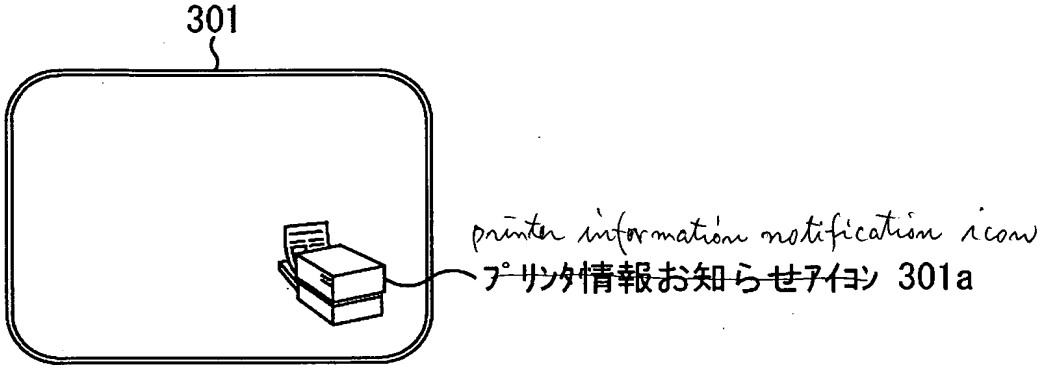

130
communication controlling unit
131
通信制御部
operation managing unit
運用管理部
134
information receiving unit
132
情報受信部
information processing unit
情報処理部
135
information transmitting unit
133
情報発信部
130b
データベース database
137a
137b
137c
137d
個別プリンタ管理
機種別診断情報
個別プリンタ状態管理
アンケート的情報管理
137e
メンテナンス説明書
each type diagnosis information management
individual printer state management
questionnaire information management
maintenance instruction
individual printer management

【図４】


120(1)
121(1)
122
130
プリンタ
printer
PC端末
pc terminal
プリンタ管理
サービスサーバ
printer management service server
画像等に感覚的不具合を感じる
S201
feel sensory problem of image etc
S202
感覚を定量的な表現に変換
convert sensation to quantitative expression
S203
第一次情報通知
notify first information
S204
analyze information
情報分析
S205
個別プリンタ状態管理と照合
compare with each type printer state management
S206(N)
必要な情報の問い合わせ
inquire necessary information
S207(N)
問い合わせに対する回答
answer to inquiry
S208
不具合修正の為のユーザメンテ内容の通知
notify user maintenance content for problem coping
S209
ユーザメンテ内容取得
acquire user maintenance content
S210
ユーザメンテ実施
execute user maintenance
結果通知
S211
notify result
機種別、個別プリンタ情報に蓄積
S212
store into each type, individual printer information
140
サービスセンタ
service center
必要な場合はサービス出動
call out service as needed

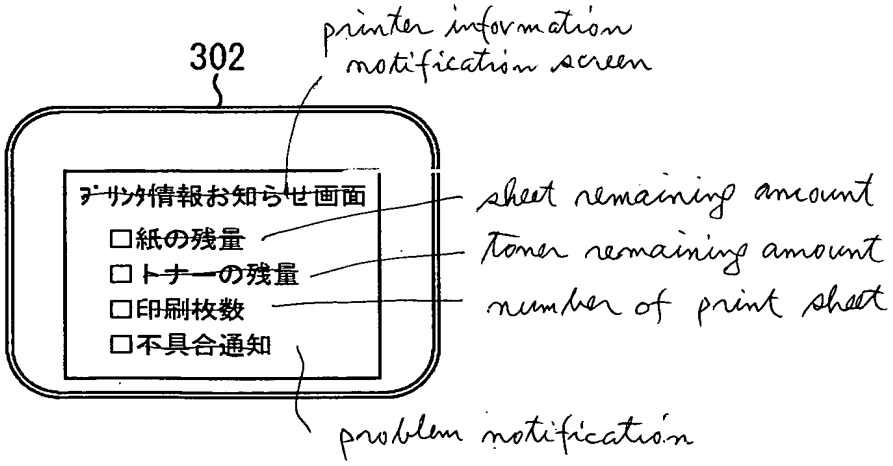
【図５】

~~アイコン~~ icon



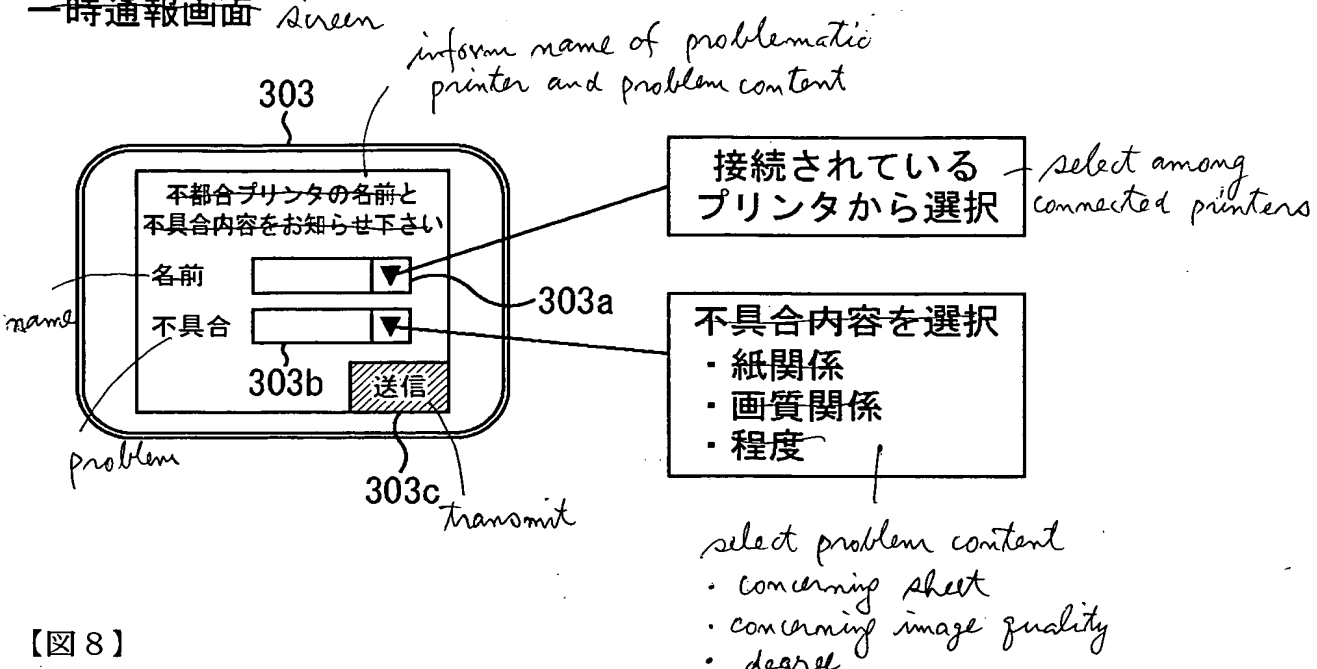
【図６】

notification screen
~~お知らせ画面~~



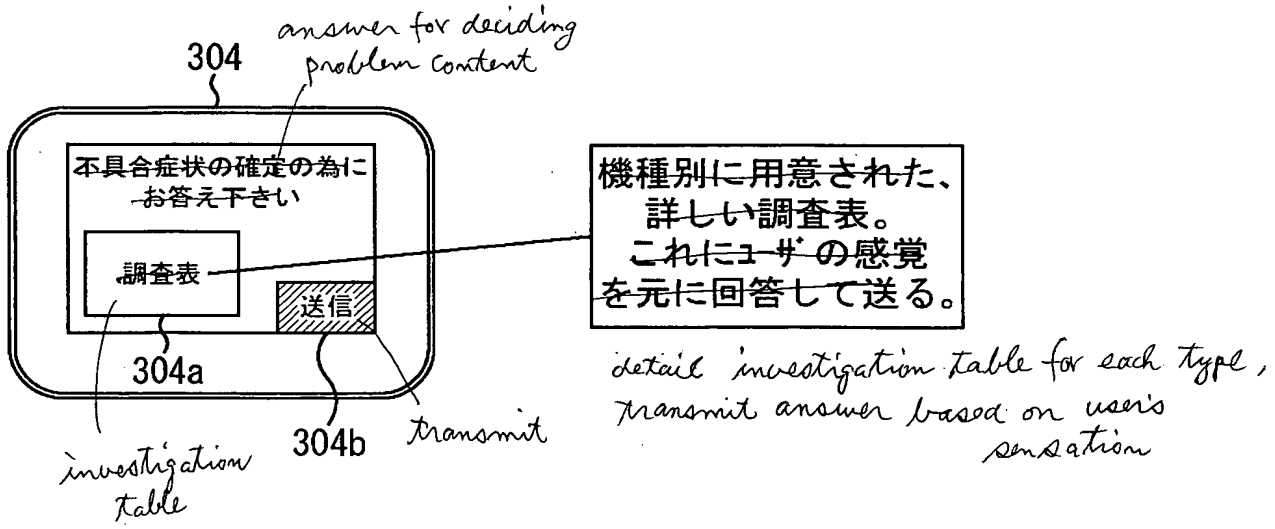
【図７】

temporary notification screen
一時通報画面



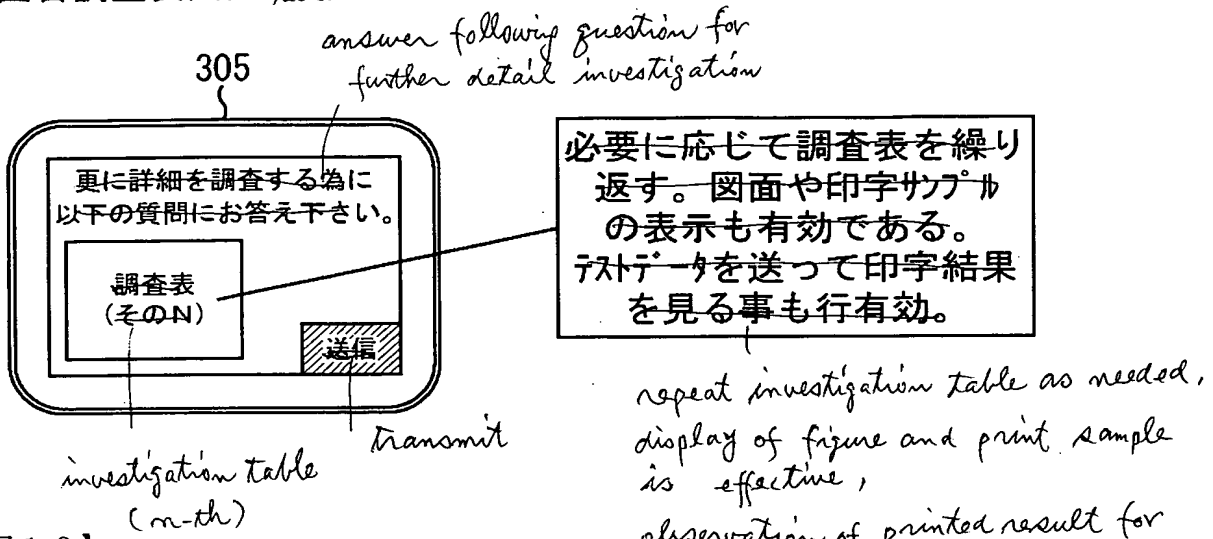
【図８】

investigation table
調査表画面 screen



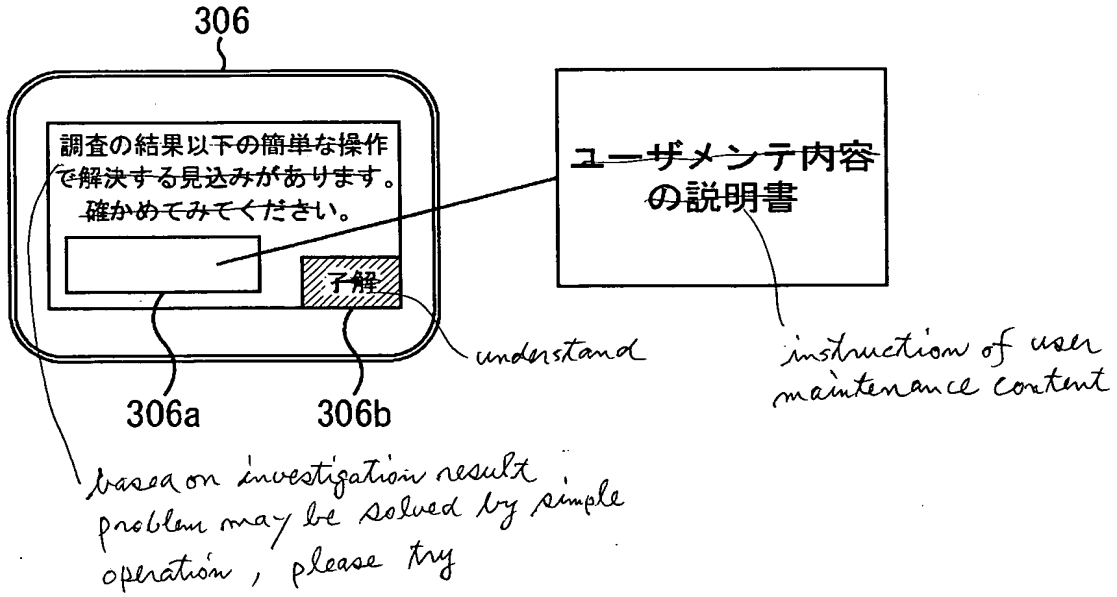
【図９】

n-th investigation table
N回目調査表画面 screen



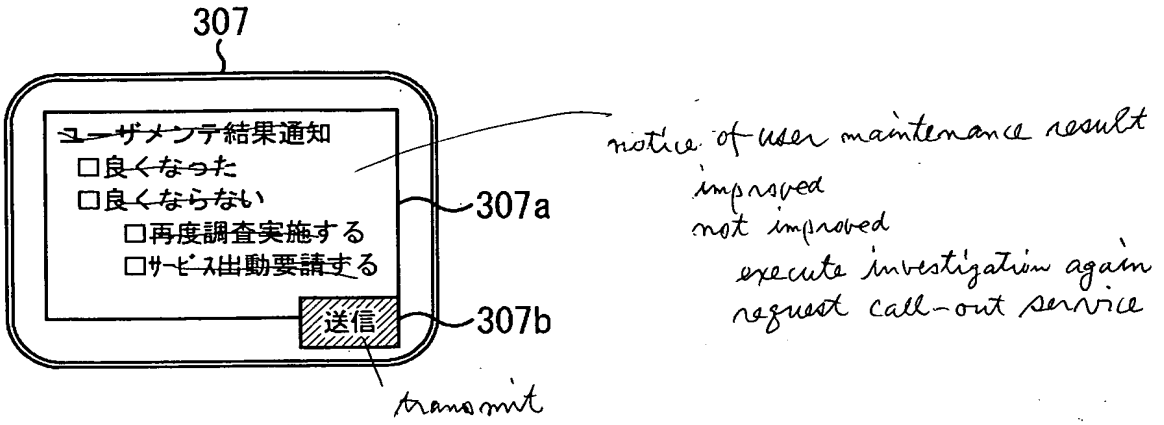
【図１０】

ユーザメンテマニュアル画面
user maintenance manual screen

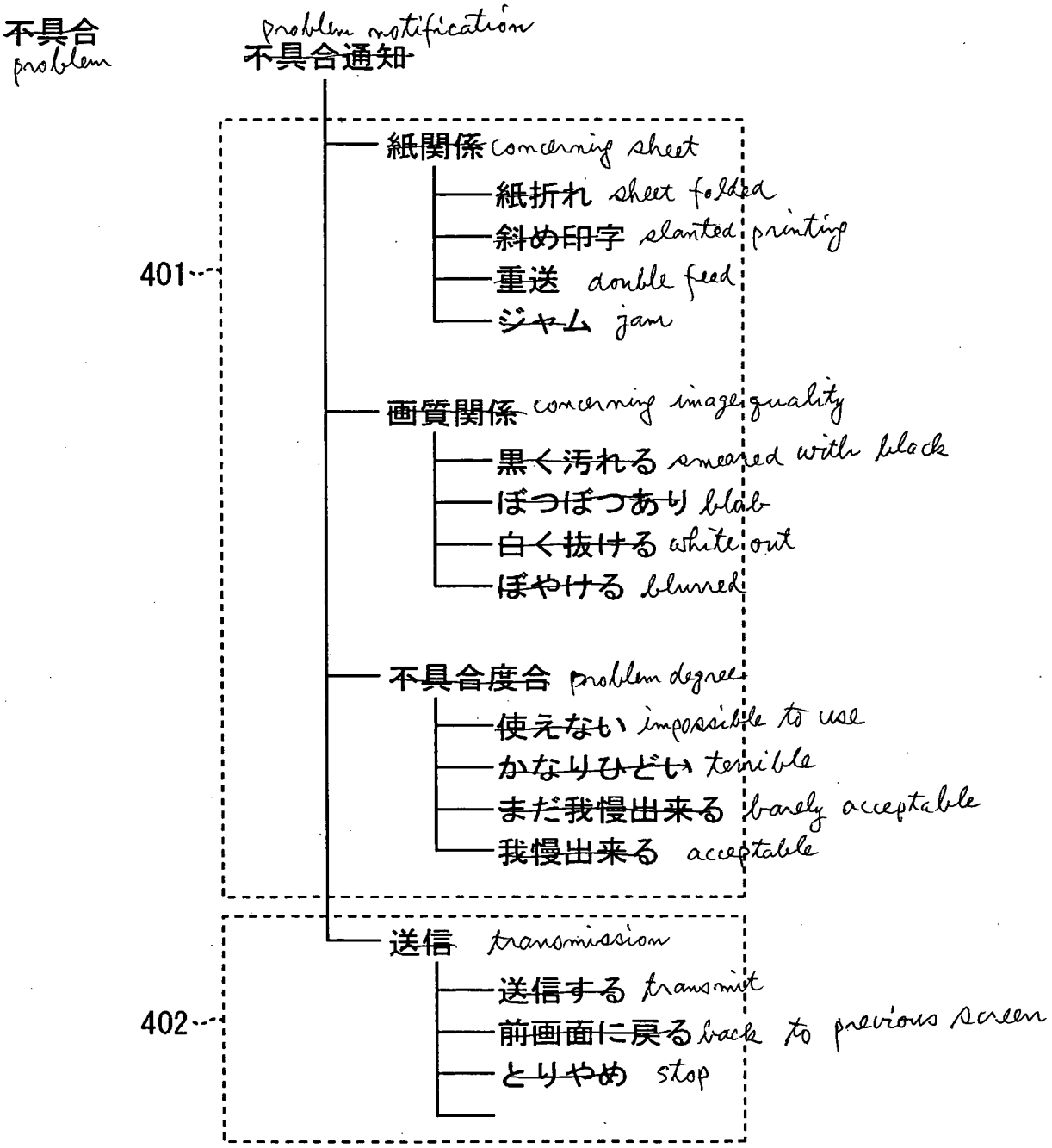


【図１１】

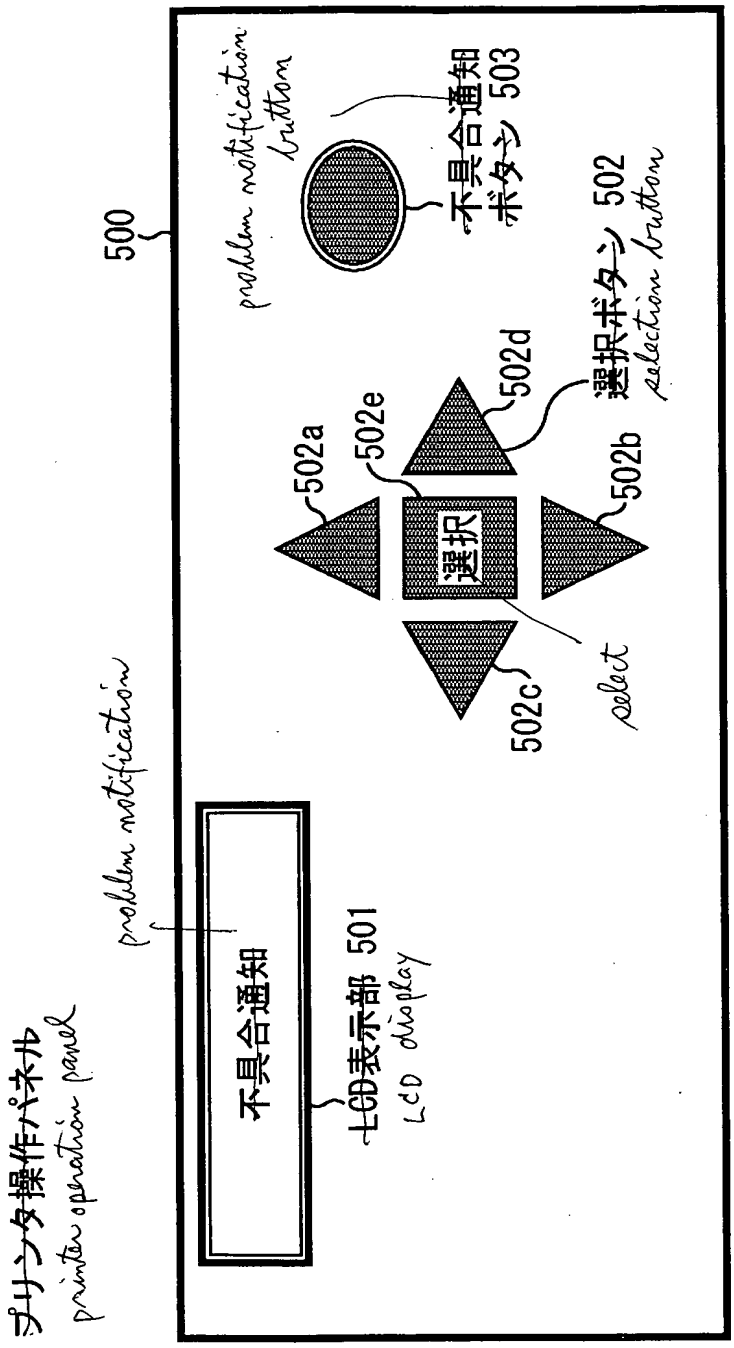
終了画面 end screen



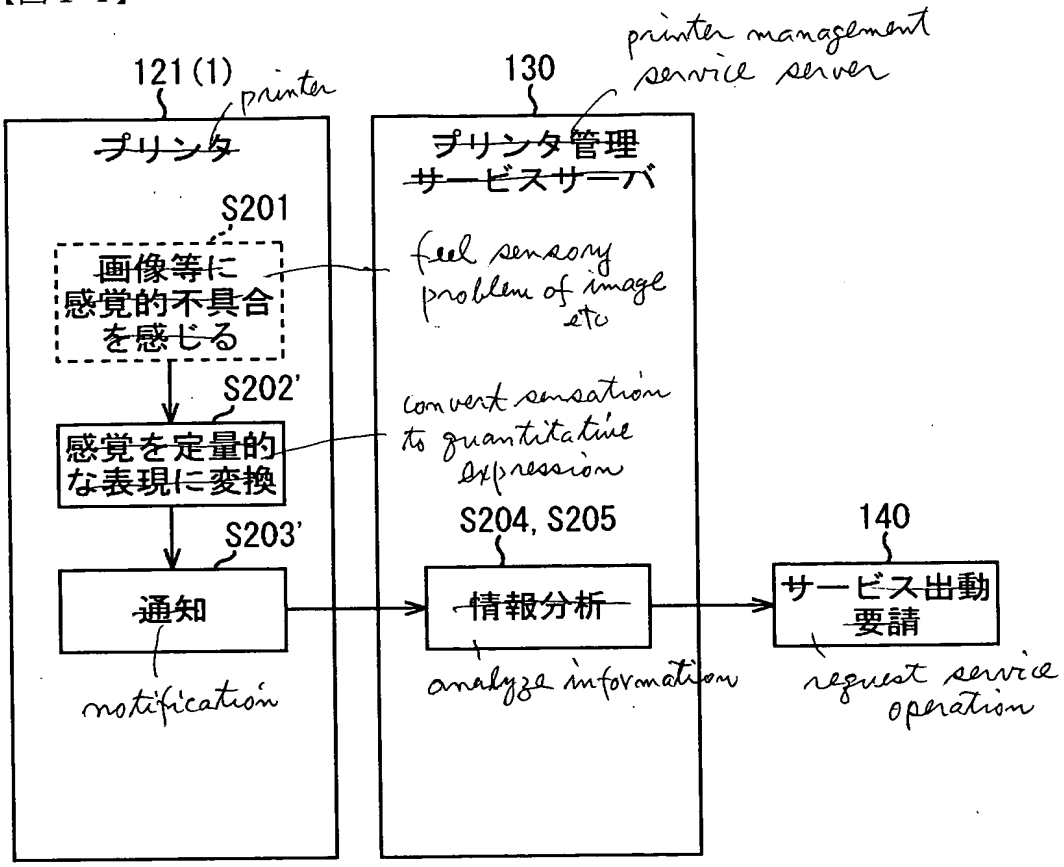
【図１２】


不具合
problem
problem notification
不具合通知
401
紙関係 concerning sheet
紙折れ sheet folded
斜め印字 slanted printing
重送 double feed
ジャム jam
画質関係 concerning image quality
黒く汚れる smeared with black
ぼつぼつあり blab
白く抜ける white out
ぼやける blurred
不具合度合 problem degree
使えない impossible to use
かなりひどい terrible
まだ我慢出来る barely acceptable
我慢出来る acceptable
402
送信 transmission
送信する transmit
前画面に戻る back to previous screen
とりやめ stop

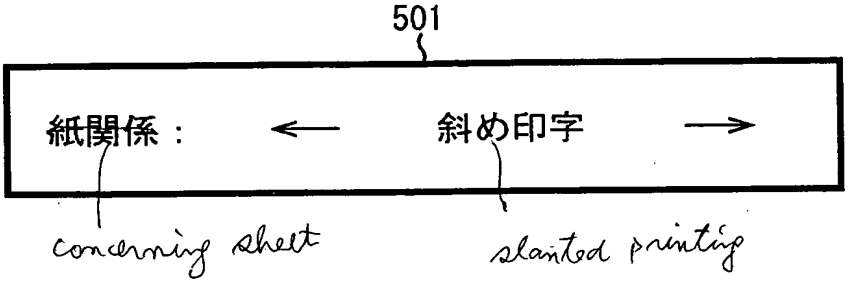
【図１３】


プリンタ操作パネル
printer operation panel
500
problem notification
不具合通知
LCD表示部 501
LCD display
problem notification button
不具合通知
ボタン 503
選択ボタン 502
selection button
502a
502e
502d
502b
選択
502c
select

【図１４】


121(1)
printer
プリンタ
130
printer management service server
プリンタ管理サービスサーバ
S201
画像等に感覚的不具合を感じる
feel sensory problem of image etc
S202'
感覚を定量的な表現に変換
convert sensation to quantitative expression
S203'
通知
notification
S204, S205
情報分析
analyze information
140
サービス出動要請
request service operation

【図１５】


501
紙関係：
←
斜め印字
→
concerning sheet
slanted printing

[Name of the Document] Abstract

[Abstract]

[Subject]

A network system with which a user can easily cope with various problems of a device, and a maintenance service side can manage the device efficiently is provided.

[Solving Means]

A user side 120(1) transmits an information that is a quantified version of a problem that a user feels (sensor problem) during usage of a device (printer) 121(1) to a maintenance service side 130. The maintenance service side 130 returns a coping information (information and the like of instruction for the user to perform the maintenance) with the problem based on the quantified information transmitted from the user side 120(1) to the user side 120(1).

[Selected Fig.] Fig. 1

2000-166649

Applicant's Information

Identification No. [000001007]

1. Date of Change: August 30, 1990

(Reason of Change) New Registration

Address: 3-30-2, Shimomaruko, Ohta-ku, Tokyo

Name: CANON KABUSHIKI KAISHA